DIPLOMA IN MECHANICAL ENGINEERING (DDM)

Diploma in Mechanical Engineering
Faculty of Mechanical and Manufacturing Engineering

YEAR	CODE	SEMESTER I SUBJECTS	CREDIT	CODE	SEMESTER II SUBJECTS	CREDIT	CODE	SEMESTER III SUBJECTS	CREDIT
1	UMS 1133/ **UMS 1143** UMB 1112 UQ* 1**1 DSM 1913 DSF 1963 DSK 1913 *UMB1011	Pengantar Kenegaraan dan Pembangunan Malaysia/ **Malaysia Studies and Culture** Technical Communication I Co-curriculum Mathematics I Physics I Chemistry English For Academic Purposes	3 2 1 3 3 3 1	UMA 1172/ UMA 1142 UMB 1122 UM* 1312 DSM 1923 DSF 1973 DDA 1013	Pengantar Pengajian Islam/ Pengajian Moral Technical Communication II Foreign Language Mathematics II Physics II Static	2 2 2 3 3 3	DDA 1822	Mechanical Engineering Practice	2
			16			**15**			**2**
2	DSM 2913 DDA 2012 DDA 2022 DDA 2033 DDA 2711 DDA 2042 DDA 2053	Mathematics III Suopervisory Skills Engineering Drawing Thermodynamics Engineering Laboratory I Safety Engineering and Maintenance Material Science	3 2 2 3 1 2 3	UMA 3032 DSM 2932 DDA 2063 DDA 2073 DDA 2082 DDA 2721	Akidah Ketuhanan & Sains Statistics Dynamics Mechanics of Solids Engineering Materials Selection Engineering Laboratory II	2 2 3 3 2 1			
			16			**13**			
3	DPK 2013 DTI 2143 DDA 3023 DDA 3033 DDA 3711 DDA 3043	Asas Perniagaan dan Keusahawanan Pengaturcaraan Komputer Computer Aided Design Fluid Mechanics Engineering Laboratory III	3 3 3 3 1 3	DDA 3052 DDA 3063 DDA 3913 DKE 3173 DDA 3072	Industrial Engineering Engineering Design Engineering project Asas Elektrik & Elektronik Proses Pembuatan	2 3 3 3 2	DDA 3814	Industrial Training (3 months/ 12 weeks)	4
			16			**13**			**4**
TOTAL CREDIT									**95**

YEAR 1

YEAR 1
SEMESTER I

UMS 1113 KENEGARAAN DAN PEMBANGUNAN MUTAKHIR MALAYSIA

SYNOPSIS :

This subject introduces the basic concept, and the process of Malaysia development. The topics will discuss the survival of the Malaysian society in facing colonialism and imperialism. Students will also be able to understand about the countris development including the social, politics and economis achievements. Students can relate the countrys development with the succesful performance of this country. Lastly, students can interpret the meaning of 'jihad' in the context of self development, society, nation and country.

REFERENCES:

1. Ahmad Esa, Harliana Halim, Khairul Azman Mohd Suhaimy, Ku Hasnan Ku Halim, Marwan Ismail, Mohd Akbal Abdullah, Shamsaadal Sholeh Saad dan Zahrul Akmal Damin (2004). "Ikhtisar Sejarah Kenegaraan & Pembangunan Malaysia." Johor Bahru : Muapakat Jaya Percetakan Sdn. Bhd.
2. Ahmad Esa dan Khairul Azman Mohd Suhaimy (2000). "Ikhtisar Sejarah Pembangunan Sosio Politik dan Ekonomi Malaysia." Johor Bahru : Muapakat Jaya Percetakan Sdn. Bhd.
3. Mardiana Nordin dan Hasnah Hussiin (2000). "Pengajian Malaysia." Shah Alam : Penerbit Fajar Bakti Sdn. Bhd.
4. Nazaruddin Mohd Jali, Ma'rof Redzuan, Asnarulkhadi Abu Samah dan Ismail Mohd Rashid (2005). "Pengajian Malaysia." Petaling Jaya : Prentice Hall.
5. Buyong Adil (1985). "Perjuangan Orang Melayu Menentang Penjajahan Abad 15-19." Kuala Lumpur : Dewan Bahasa dan Pustaka.
6. Andaya, B.W. dan Andaya, L.Y. (1982). "A History of Malaysia." London : Macmillan.
7. Aziz Deraman (1992). "Tamadun Melayu dan Pembinaan Bangsa Malaysia." Kuala Lumpur Arena Ilmu Sdn. Bhd.

UMB 1112 TECHNICAL COMMUNICATION I

SYNOPSIS :

This course introduces students to report writing skills needed at tertiary level. Students will learn basic report writing skills such as proposals, progress report and analytical report. In order to do this, they will learn how to collect data using questionnaires. Prior to that, students will also be trained to polish up their skills in definitive and descriptive essays using accurate grammar, vocabulary and sentence structure.

REFERENCES :

1. Finkelstein, J. (2008). Pocket Book of technical writing. 3rd ed. Singapore: McGraw Hill.
2. Kolin, P. C. (2006). Successful writing at work. Concise ed. USA:Houghton Mufflin Company.
3. Salbiah Seliman et. al. (2004). English Communication for learners in engineering. Malaysia: Prentice Hall.
4. Lakshmy Anantha Krishnan et. al. (2003). Engineering your report: From start to finish. Singapore: Prentice Hall.
5. Gerson, S. J. & Gerson, S. M. (2003). Technical writing: Process and product. 3rd ed. New Jersey: Prentice Hall.
6. Eisenberg, A. (1992). Effective technical communication. 2nd ed. New York: McGraw Hill.
7. Dorothy Cheung et. al. (1999). Report writing for engineering students. 2nd ed. Singapore: Prentice Hall

UQ* 11 CO-CURRICULUM I**

SYNOPSIS :

Matapelajaran ini ditawarkan dalam bentuk pelbagai akiviti pilihan untuk pelajar peringkat Sarjana Muda dan Diploma. Tiga bidang aktiviti yang ditawarkan adalah Sukan & Rekreasi, Kelab/Persatuan dan Persatuan Beruniform.

DSM 1913 MATHEMATICS I

SYNOPSIS :

Real Number : Set for real numbers, exponent, logarithm and radicals. **Inequalities and Absolute Value**. **Polynomial :** Introduction, quadratics equation, numerical methods solving non-linear equations : bisection and secant methods, partial fraction. **Sequence and Series :** Sequence and arithmetic, sequence and geometric series, binomial series. **Trigonometry :** Trigonometric ratios of acute angles and arbitrary angles, trigonometric equation. **Function :** Relation and function, graph, algebra function, piecewise function, trigonometry, exponent, logarithm, hyperbolic and its inverse. **Statistics** : Definition of data (mean, mode, median), measurement of ungrouped and group data dispersion(range, mean deviation and standard deviation). **Probability** : Independent and conditional event, Bayes theorem.

REFERENCES

1. Stroud, K. A., Booth, D.J. (2007) *Engineering Mathematics*. 6th Ed. US: Palgrave Macmillan.
2. Anton, H., Bivens, I., Davis, S. (2005) *Calculus*. 8th Ed. USA: John Wiley & Sons, Inc.
3. K. Bayn Martin – Gay (1993) *Intermediate Algebra*. Prentice Hall, Englewoods Cliffs.
4. Thomas, G. B., Finney, R. L. (1996) *Calculus and Analytic Geometry*. 9th Ed. USA: Addison- Wesley Publishing Company.
5. Walpole E.R, Myers R.H, Myers S. L. (1998) *Probability And Statistics* 6th Ed.USA : Prentice Hall, New Jersey.
6. Abd. Wahid Md Raji et al. (2000) *Matematik Asas,* Jilid I & II., Jabatan Matematik, Fakulti Sains, UTM.

DSF 1963 PHYSICS I

SYNOPSIS :

DSF 1963 Physics I

Synopsis

Measurement and Unit: Measurement, base quantity, derived quantity, unit and dimension, definition of standard, scientific notation, order of magnitude estimation, conversion of unit, significant figures in addition, subtraction, multiplication and division.

Vector: Introduction to vector, addition and resultant of vector, resolving vector. **Linear and Rotational Kinematics:** Concept of position, distance, displacement, speed, velocity and acceleration, distance-time graph and velocity-time graph, linear motion with constant velocity, linear motion with constant acceleration, free fall motion, projectile motion. **Rotational Motion:** Angular displacement, angular velocity, angular acceleration and rotational motion equation with constant angular acceleration. **Particle Dynamics:** Newton's First Law and Inertia, Newton's Second Law and concept of mass, weight and momentum. Newton's Third Law and normal force and reaction, resultant of forces acted on a body, free-body diagrams, dynamics of motion of body on horizontal, incline and vertical plane, centripetal force. **Work, Power and Energy:** Principal of work-energy and principal of conservation of energy, linear momentum and impulse. **Simple Harmonic Motion:** Restoring force, definition and equation of SHM (displacement, velocity and acceleration), examples of SHM, simple pendulum and spring-mass system, energy of SHM, concept of free oscillations, damped oscillations, forced oscillations and resonance. **Physic Laboratory:** Related to the topics in DSF 1963.

REFERENCES

1. Giambattista, A., Richardson, B. M., Richardson, R. C. (2007) *College Physics* 2nd Ed. New York: Mc Graw Hill.
2. Serway, R. A., Faughn, J. S., Moses, C. J. (2003) *College Physics*. 6th Ed. USA: Pacific Grove, CA: Thomson Learning.
3. Bueche, F. J., Hecht, E., Hademenos, G. J. (2000) *College Physics: Based on Schaum's Outline of College Physics.* New York: McGraw-Hill.
4. Urone, P. P. (2001) *College Physics.* 2nd Ed. USA: Pacific Grove, CA: Brooks/Cole.

DSK 1913 CHEMISTRY

SYNOPSIS :

Atomic Concept and Mole: Matter and states of matter (element, pure compound, mixture). Definition and naming of atoms, molecules and ions. Atomic, molecular and molar mass. Chemical equation and stoichiometry. Solution concentration and volumetric analysis. **Electronic Structure of Atom:** Bohr's Atomic Theory. Quantum numbers and electron configuration. **Periodic Table of Elements:** Classification and periodic properties. **Chemical Bonding:** Lewis structures. Ionic and covalent bond. Intermolecular forces. **Gas**

Laws: Particles in gas. Gas laws. **Thermochemistry:** Enthalpy and enthalpy change. Hess's law. **Chemical Kinetics:** Rate of reaction and rate law. Effect of temperature, concentration, pressure and catalyst on reaction rate. **Chemical Equilibrium:** Reversible reaction. Equilibrium constant. Le Chatelier's Principle. **Acid-Base:** Definition. Strong and weak acids. Strong and weak bases. pH and pOH. **Electrochemistry:** Redox reaction, electrochemical cell, Nernst equation and Faraday's Law. **Organic Chemistry:** Hydrocarbon, alkanes, alkenes, alkynes and their reactions. Functional groups. **Chemical Experiments:** Experiments on selected topics.

REFERENCES

1. Hatijah Basri dan rakan-rakan (2005) *Modul pengajaran dan pembelajaran Kimia. (Module)*
2. Raymond Chang (2007) *Chemistry* 9th. Edition, McGraw-Hill.
3. Martin S.Silberberg (2003) *Chemistry. The Molecular Nature of Matter and Change*, 3rd *Edition*. WCB McGraw-Hill.
4. Moore,Stanitski and Jurs.(2002) *Chemistry The Molucular Scince,* Harcourt College Publishers
5. Ralph A. Burns. (1999) *Fundamental of Chemistry,* 6thEdition. Prentice Hall.
6. John W.Hill and Ralph H.Petrucci. (1996) *General Chemistry.* Prentice Hall.
7. John McCurry dan Robert C.Fay.(2001) *General Chemistry*. Prentice Hall

UMB 1011 ENGLISH FOR ACADEMIC PURPOSES

SYNOPSIS :

English for Academic Purposes focuses on fulfilling students' academic requirements such as the acquisition of reading, writing, speaking and listening skills in English. The course also provides opportunities for students to acquire note taking and study skills. Students will be reinforced on aspects of English language oral and written skills that are most relevant to them in their academic work. By the end of the course, students should be able to use English in a wide range of academic activities.

REFERENCES:

1. n.a (2004). *Koleksi Kertas Soalan MUET Oktober 2003.* Kuala Lumpur : Pearson Malaysia.
2. Ng. K. S. et al. (2000). *Study Skills for the Malaysian University English Test.* Kuala Lumpur : Federal Publication.
3. Pfeiffer, W.S. (2000) *Technical Writing: A Practical Approach.* New Jersey. Prentice Hall.
4. Teoh, S. A. & Zainab Mohd. Noor (2000). *Test-Taking Strategies for MUET.* Kuala Lumpur : Penerbit Fajar Bakti.
5. Walker, E. (2004) *Grammar Practice.* Kuala Lumpur. Pearson Education Malaysia.Zuraidah Mohd. Don et al. (2000). *Excel in MUET (2nd edition).* Kuala Lumpur : Penerbit Fajar Bakti.

YEAR 1
SEMESTER II

UMA 1132 ISLAMIC STUDIES

SYNOPSIS :

This course explains about Islamic concepts which cover aqidah, syariah and akhlak. The scope of the discussion involves the Islamic principles, iman's principles and Ihsan. Focus will also be given on the basic of Islam that emphasizes on the concept of tauhid, ibadah and akhlak. This course also clarifies about the foundation of Islam (*maqasid al syariah*), current issues and the interrelation with akhlak.

REFERENCES :

1. Abdul Rahman I.Doi, (1995), *Undang-undang Syariah, terjemahan,* Rohani Abdul Rahim, Kuala Lumpur m: Dewan Bahasa dan Pustaka
2. Harun Din, (Dr.), (2001), *Manusia dan Islam*, Kuala Lumpur, Dewan Bahasa dan Pustaka
3. Mohd. Sulaiman Haji Yasin, (1988), *Pengantar Aqidah*, Kuala Lumpur : Dewan Bahasa dan Pustaka.
4. Mustafa Hj. Daun, (1996), *Tamadun Islam*, Kuala Lumpur : Utusan Publications dan Distribution
5. Wahbah al-Zuhaily, (Dr.), (1984), *Fiqh al-Islami wa Adillatuhu*, Damsyik : Dar al-Fikr
6. Yusuf al-Qardawi, (1993), *Ibadah Dalam Islam*, Kuala Lumpur : Pustaka Suhaba

UMA 1142 MORAL STUDIES

SYNOPSIS :

This subject explores the moral concepts, some aspects related to the morality and its importance in our daily lives, some western moral theories, moral values in great religions of the world, morality and ethics in professional careers and contemporary moral issues.

REFERENCES :

1. Eow Boon Hin. 2002. Moral Education. Longman.
2. Ahmad Khamis. 1999. Etika Untuk Institusi Pengajian Tinggi. Kuala Lumpur. Kumpulan Budiman.

3. Mohd Nasir Omar. 1986. Falsafah Etika; Perbandingan Islam dan Barat. Kuala Lumpur. JPM.
4. Hussain Othman. 2009. Wacana Asasi Agama dan Sains, B. Pahat. Penerbit UTHM.
5. Hussain Othman, S.M. Dawilah Al-Edrus, Berhannudin M. Salleh, Abdullah Sulaiman, 2009. PBL Untuk Pembangunan Komuniti Lestari, Batu Pahat, Penerbit UTHM.

UMB 1122 TECHNICAL COMMUNICATION II

SYNOPSIS :

This course emphasises on task- based learning approach and focuses on developing students' delivery of speech in oral interactions and presentations. Importance is given on mastery of self-directed learning, team-work, research, oral presentations, reasoning and creativity. This course also enables students to acquire knowledge and skills necessary for conducting and participating in meetings, including writing of meeting documents. Students will also be exposed to the techniques of writing job application letters, resumes and conducting job interviews.

REFERENCES :

1. Finkelstein, J. (2008). *Pocket Book of technical writing.* 3rd ed. Singapore: McGraw Hill.
2. Kolin, P. C. (2006). *Successful writing at work.* Concise ed. USA: Houghton Mufflin Company.
3. Salbiah Seliman et. al. (2004). *English Communication for learners in engineering.* Malaysia: Prentice Hall.
4. Lakshmy Anantha Krishnan et. al. (2003). *Engineering your report: From start to finish.* Singapore: Prentice Hall.
5. Gerson, S. J. & Gerson, S. M. (2003). *Technical writing: Process and product.* 3rded.New Jersey: Prentice Hall.

UM* 1312 FOREIGN LANGUAGE

- **UMM 1312 MANDARIN**

SYNOPSIS :

This course is offered to students focusing on the learning of the basic of mandarin. Students are exposed to the skills of listening, reading, speaking and writing with basic vocabulary, grammar and

structure. Students are also provided with a lot of opportunities to practice their communication and writing skills.

REFERENCES :

1. Liang An Xiang. 2002. EPH Publishing (M) Sdn. Bhd. K.L.
2. Shi Yun. 2002. EPH Publishing (M) Sdn. Bhd. K.L.
3. Claudia Ross & Jing-heng Sheng Ma. 2006. Routledge. London.
4. Dr.Lim Choon Bee. 2005. Universiti Putra Malaysia Press. Serdang.
5. Hui Jin Chang. 2002. United Publishing House(M) Sdn.Bhd. K.L.
6. Claudia Ross. 2002 .Press of Ohio. USA.
7. Duan Duan Li & Yanping Xie. 2002. Press of Ohio. USA.

- **UMG 1312 GERMAN**

SYNOPSIS :

This course is designed for students to learn the basic of German language. Students are exposed to the skills of listening, reading, speaking, and writing with basic vocabulary, grammar and structure. Students are also exposed to the real daily situations which will help them to communicate using German language.

REFERENCES :

1. Nur Zakiah binti Amir Hamzah, Guten Tag der deutschen sprache, Pejabat Penerbit UTHM
2. Angela Wilkes. 2006. *GERMAN FOR BEGINNERS,* London: Usborne Publishing Ltd.
3. Hartmurt Aufderstrasse. 1998. *Themen Neu 1,* Lehrwerk fuer Deutsch als Fremdsprache, Textbook. Muenchen: Max Hueber Verlag.
4. Dr. Albert H. Small. 1991. *German â la Cartoon.* German Grammar through Cartoons. Passports Books

- **UMJ 1312 JAPANESE**

SYNOPSIS :

This course is designed for students to learn basic Japanese language such as speaking, listening, reading, and writing. Students will be exposed to the real daily conversations which will enable them to communicate in basic Japanese language.

REFERENCES :

1. *Kodansya`s Furigana Japanese Dictionary(2005)*
2. Minna no Nihongo Listening (2006) Second Published :3A Corporation Tokyo
3. Minna no Nihongo Jap-English (2006) Second Published :3A Corporation Tokyo
4. Japanese Conversation for Beginners (2006) Bonjinsha,Tokyo Japan
5. Japanese Language Center for International Students,Tokyo Universitiy of foreign Studies
6. Modul Pengajaran Bahasa Jepun Tahap 1 (2008) Penerbit UTHM
7. The AOTS Nihongo Dictionary for Practical Use (2005) 3A Corporation,Japan
8. Informative Japanese Dictionary (2005) Shinchousha Corporation,Japan

- **UMR 1312 ARABIC**

SYNOPSIS :

This course is designed for students to learn the basic Arabic. Students are exposed to the skills of listening, reading, speaking, and writing with basic vocabulary, grammar and structure. Students are also exposed to the real daily situations which will help them to communicate using Arabic language.

REFERENCES :

1. Mohd Hisyam Abdul Rahim; Ahmad Sharifuddin Mustapha; Mohd Zain Mubarak. 2008. *Bahasa Arab UMR 1312*. Batu Pahat: Penerbit UTHM.
2. Mohd Hisyam bin Abdul Rahim. 2005. *Senang Berbahasa Arab*. Batu Pahat: Penerbit KUiTTHO.
3. Ab. Halim Mohammed; Rabiyah Hajimaming; Wan Muhammad Wan Sulong. 2007. *Bahasa Arab Permulaan.* Serdang: Penerbit UPM.
4. Mohd Khairudin Khudri. 2006. *Akar Umbi Pembelajaran Bahasa Arab.* Kajang: One Touch Creative.
5. Sini, Mahmud Ismail; Abd Aziz, Nasif Mustapha; Husayn, Mukhtar. T.th. a*l-'Arabiyyah Lil Nashiin, Kitab al-Tilmiz*. al-Mamlakah al-Saudiah: Idarah al-Kutub al-Madrasiyah, Wizarah al-Taalim.
6. Ahmad Hassan. 1995. *Pelajaran Bahasa Arab Untuk Orang Bukan Arab*. Kota Bharu: Pustaka Aman Press.

7. Hashim Hanafiah. 1981. *Al- Lughah al-Arabiyyah*. Kuala Lumpur: Percetakan Watan.

- **UMP 1312 SPANISH**

SYNOPSIS :

This course is designed for students to learn the basic Spanish language. Students are exposed to the skills of listening, reading, speaking, and writing with basic vocabulary, grammar and structure. Students are also exposed to the real daily situations which will help them to communicate using Spanish language.

REFERENCES :

1. Nurul Sabrina Zan: Hola! Hablo español First Edition Batu Pahat: Penerbit UTHM.
2. Joy Renjilian - Burgay, Ana Beatriz Chiquito y Susan M. Mraz: Caminos
3. Salina Husain : Vamos a aprender español lengua extranjera
4. Gail Stein : The Complete IDIOT'S GUIDE to Learning Spanish on Your Own Second Edition.
5. Irwin Stern : Ultimate SPANISH revised and update.
6. Julianne Dueber : Spanish Vocabulary by Barron's Educational Series, Inc.
7. Oxford University Press 1997,2000 Second Edition 2000- The Pocket Oxford Spanish Dictionary
8. Collins Dictionary: Español>Inglés, English>Spanish - New Edition

- **UMF 1312 FRENCH**

SYNOPSIS :

This course is offered to students focusing on the learning of the basic of French. Students are exposed to the skills of listening, reading, speaking and writing with basic vocabulary, grammar and structure. Students are also provided with a lot of opportunities to practice their communication and writing skills.

REFERENCES :

1. Girardet, Jacky et Cridlig, Jean-Marie, 1996. Méthod de français: PANORAMA 1. Paris: CLE International.
2. Hatier, 1995. Le Nouveau Bescherelle Complete Guide 12 000 French Verbs. Paris: LIBRAIRIE HATIER.
3. Kaneman-Pougatch, Massia et al, (1997). Méthod de français: Café Crème 1. Paris: HACHETTE F.L.E.
4. Grégoir, Maïa et al, (1995). Grammaire Progressive du Français avec 500 Exercices. Paris: CLE International.
5. Miquel, Claire Leroy et al, (1995). Vocabulaire Progressive du Français avec 250 exercices. Paris: CLE International.
6. Capelle, Guy et Gidon, Noëlle, 1995. Méthod de français: Le Nouvel Espaces 1. Paris: HACHETTE F.L.E..
7. Hatier. 2002. Le Nouveau Bescherelle 12,000 French Verbs. English Edition. Paris: Librairie Hatier.
8. Das, Theresa & Yam-Ramanantsoa, Hanta. 1992. Bienvenue Chez Nous. Kuala Lumpur: L'Ambassad de France et DBP.
9. DBP, USM & Kedutaan Besar Perancis, 1996. Kamus Perancis Melayu Dewan. Kuala Lumpur: DBP
10. French Dictionary 1999. The New Collins Robert 5th Edition. Paris: Harper Collins Publishers.

DSM 1923 MATHEMATICS II

PRE REQUISITE : DSM 1913 (MATHEMATICS I)

Limit: Definition, one-sided limit, limit at infinity. Limit and continuity of functions. **Differentiation:** First principle, differentiation rules, higher order differentiation, the chain rule, differentiation of functions : logarithmic, exponential, implicit, parametric, trigonometric, and hyperbolic. **Application of Differentiation:** Small increment, rates of change, applied maximum and minimum problems, analysis of functions, curve sketching. *L'Hôpital*'s Rules : (0/0, ∞/∞, $0\cdot\infty$, ∞^0, 1^∞, $\infty - \infty$). **Integration:** As anti derivatives, integration of standard function. Definite integral. Integration techniques: substitution, partial fraction and by part. **Numerical Integration**: Trapezium, Simpson 1/3 .**Application of Integration:** Area of a region, volume of revolution, curve length, surface area of revolution. **Improper Integral.**

REFERENCES

1. Abd. Wahid Md. Raji, Hamisan Rahmat, Ismail Kamis, Mohd Nor Mohamad, Ong, C.T. (2003) *Calculus*
2. Anton, H., Bivens, I., Davis, S. (2005) *Calculus*. 8th Ed. USA: John Wiley & Sons, Inc.
3. Berkey, D.D & Blanchard. Paul (1992) *Calculus*. 3rd Ed. New York : Saunders College Publishing
4. Thomas, G. B., Finney, R. L. (1996) *Calculus and Analytic Geometry*. 9th Ed. USA: Addison- Wesley Publishing Company.
5. Stroud, K. A., Booth, D.J. (2007) *Engineering Mathematics*. 6th Ed. US: Palgrave Macmillan.
6. Yusof Yaacob, Maslan Osman (2001) *Matematik Kejuruteraan.* Skudai : UTM

DSF 1973 PHYSICS II

SYNOPSIS :

Elasticity of Material: Stress and strain, Hooke's Law, Young's Modulus, Stress-strain diagram, shear modulus, bulk modulus, Poisson ratio. **Hidrostatic:** Pressure, density, Pascal principle, Archimedes principle, bouyancy. **Heat and Temperature:** Definitions of heat and temperature, thermal equilibrium, temperature scales, Heat: Heat capacity and specific heat, latent heat of fusion, latent heat of vaporization, calorimetry principles. Heat Transfer: Conduction and convection. **Thermal Properties of Matter:** Linear expansion, area expansion and volume expansion. Liquid Expansion: Apparent and absolute expansion. **Mechanical Wave:** Wave Definition, characteristics and types of mechanical wave, general equation of progressive wave, superposition principle, standing wave, stretched string, air column in open and closed pipes, wave velocity in mediums. **Sound Wave:** Sound intensity, sound level, Doppler's effect. **Electromagnetic Wave:** Lights as an electromagnetic wave, intensity and density of energy. Lighting: Candela, lumens. **Interference:** Conditions for interference, conditions for constructive and destructive interference, Young's double-slit interference. **Diffraction:** Fraunhofer diffraction (single slit). **Polarization:** Polarization method and Malus's Law. **Geometrical Optics:** Reflection of Light: Reflection Law, formation of image by plane mirror. **Refraction of Light:** Snell's Law, characteristics of spherical lens (Concave and Convex), formation of image by plane and spherical surface, magnification of image by

spherical lens. **Physic Laboratory:** Related to the topics in DSF 1973.

REFERENCES

1. Giambattista, A., Richardson, B. M., Richardson, R. C. (2007) *College Physics* 2nd Ed. New York: Mc Graw Hill.
2. Serway, R. A., Faughn, J. S., Moses, C. J. (2003) *College Physics*. 6th Ed. USA: Pacific Grove, CA: Thomson Learning.
3. Bueche, F. J., Hecht, E., Hademenos, G. J. (2000) *College Physics: Based on Schaum's Outline of College Physics.* New York: McGraw-Hill.
4. Urone, P. P. (2001) *College Physics.* 2nd Ed. USA: Pacific Grove, CA: Brooks/Cole.

DDA 1013 STATICS

SYNOPSIS :

Introduction to Static, Static of Particles, Static of Rigid Bodies, Centroids and Centre of Gravity, Analysis of Structures and Friction.

REFERENCES :

1. Hibbeler R. C., 2001. *"Engineering Mechanics - Statics"* S. I. Edition, Prentice Hall
2. Bear F. P. and Johnson E. R., 1997. *"Vector Mechanics for Engineers - Statics",* 2nd S. I. Metric Edition, Mc Graw Hill
3. Meriam J. L. and Kraige L.G., 1997. *"Engineering Mechanics Vol. 2 - Statics",* Fourth Edition, John Wiley & Sons, Inc
4. Mohd Imran Ghazali dan Mohd Shukor Abu Hassan, 2002. *"Mekanik Kejuruteraan – Statik"*, Jilid 1 & 2, Penerbit UTM

YEAR 1
SEMESTER III

DDA 1822 MECHANICAL ENGINEERING PRACTICE

SYNOPSIS :

Workshop Safety and Health, Fitting , Welding, Conventonal Lathe, Conventional Milling, Foundry workshop safety, wood, wax pattern, moist sand mould, sand attributes, plaster mould, wax mould casting, lost spume casting, industrial automation, pneumatic control system, electro-pneumatic and programmable logic controllers (PLC), Basics of metal cutting,cutting tools materials and cutting fluids,CNC Turning, CNC Milling, Operation principles of EDM wire-cut and die sinking machine.

REFERENCES :

1. Dave Sminth, *"Welding: Skill and Technology".* 1984, McGraw Hill
2. Richard R. Kibbe, John E. Neely, Roland O. Meyer, Warren T. White, *"Machine Tool Practices",* 1995, 5th Ed., Prentice Hall
3. Steve F. Krar, Albert F. Check, *"Technology if Machine Tools",* 1998, 5th Ed, McGraw Hill
4. S Kalpakjian dan E.D Addison, *"Manufacturing Processes for Engineering Materials",* 1987, 2nd Ed., John Wiley and Sons

YEAR 2

YEAR 2
SEMESTER I

DSM 2913 MATHEMATICS III

PRE REQUISITE : DSM 1923 (MATHEMATICS II)

SYNOPSIS :

Matrices: Arithmetic operations, row operations, system of linear equations: inverse matrices, Gauss Jordan elimination and numerical solution : Gauss-Seidel method . **Vector:** Dot and cross product,. Line and plane equation in R^3. **Complex Number**: Definition, arithmetic operations, polar form, Euler, De Moivre theorem. **First Order Linear Differential Equation:** Separable, homogeneous, linear and exact, Application of first order differential equations. **Second Order Linear Differential Equations**: Undetermined coefficients, variation of parameters. **Laplace Transform:** Definition, characteristics : linearity, first shift, and multiply with t^n. **Inverse Laplace Transform**: Definition and characteristics. Convolution theorem. Initial and boundary value problems.

REFERENCE

1. Abd Wahid Raji et.al. (2000) *Matematik Asas* Jilid 11, Jabatan Matematik, Fakulti Sains, UTM.
2. Abd. Wahid Md. Raji, Mohd Nor Mohamad (2008) *Differential Equations for Engineering Students*.
3. Anton, H., Bivens, I., Davis, S. (2005) *Calculus*. 8th Ed. USA: John Wiley & Sons, Inc.
4. Berkey, D.D & Blanchard. Paul. (1992) Calculus 3rd Ed. New York : Saunders College Publishing.
5. Stroud, K. A., Booth, D.J. (2007) *Engineering Mathematics*. 6th Ed. US: Palgrave Macmillan.

DDA 2012 SUPERVISION SKILL

SYNOPSIS:

To build a supervision skills with leadership in organization based on engineering and technology, in part one covered topic foundations of supervision, making decisions, communication, ethics and organization's politics and managing time, part two give emphasis for

planning and organizing skills, part three also emphasis in the process recruitment of staff, development of staff, performance evaluation, job right and workers' associaton, part four focused on human relations skills, part five role of controlling skills in helping supervision process.

REFERENCES:

1. Rue, W.L. and Byars L.L. (2001). *"Supervision: Key Link to Productivity"*. 7th edition. Irwin, McGraw Hill.
2. Kouzes, J.M. and Posner, B.Z.(1996). *"Leadership Challenge: How To Keep Getting Extraordinary Things Done In Organisations"*. 2nd edition. John Wiley & Sons Ltd.
3. Schein E.H. (1999). *"Organisational Culture and Leadership"*. 2nd edition. John Wiley & Sons Ltd.
4. Manz C.C. and Sims H.P.,JR. (2001). *"The New Superleadership"*. Berrett Koehler Publishers.

DDA 2022 ENGINEERING DRAWING

SYNOPSIS:

Geometry drawing, Geometry, Dimensioning, Tolerance and limits, Orthographic, Isometric, Cross section drawing.

REFERENCES:

1. **Mohd. Fadzil Daud, Khairul Anuar Hanafiah, (2000)**, *"Panduan Asas Lukisan Kejuruteraan"*, Universiti Teknologi Malaysia.
2. **A.W. Boundy, (2002)**, *"Engineering Drawing - Six Edition*", Mc.Graw Hill.
3. **Gieseckle, Mitchel. Hill (2000)**, *"Engineering Graphics"*, Seventh Ediiton, Prentice Hall, Prectice Hall.
4. **M. B. Shah, B. C. Rana, (2005),** "*Engineering Drawing*", Pearson Education.

DDA 2033 THERMODYNAMICS

SYNOPSIS :

Definition and basic concepts. Properties of compressible pure substances. Heat and Work. The First Law of Thermodynamics. The Second Law of Thermodynamics. Entropy, Thermodynamics Cycles.

REFERENCES :

1. Howel, J. R. dan Buckins, R. O., (1993), *"Fundamental of Engineering Thermodynamics",* McGraw Hill.
2. Spalding, D. R dan Cole, E. H., (1978), *"Engineering Thermodynamics"*, 3rd Edition, Edward Arnold.
3. Rogers, G. F. C. dan Meyhew, Y. R., (1993), *"Engineering Thermodynamics: Work and Heat Transfer ",* Longman.
4. Cengel, Y. A. dan Boles, M. A., (1994), *"Thermodynamics: An Engineering Approach",* 2nd Edition, McGraw Hill.

DDA 2711 ENGINEERING LABORATORY I

SYNOPSIS:

Static:
Force Equilibrium, Principle of Moment, Rigid Body Equilibrium, Centre of Gravity, Friction on Plane.

Thermodynamic:
Marcet Boiler, Petrol Engine Performance Test, Air Conditioning and Cooling Unit.

Materials Science:
Impact Test, Creep Test, Modulus of Rupture (MOR) Test, Polymer Tensile Test, Hardness Test, Heat Treatment Test.

REFERENCES:

1. Boles M. A. and Cengel Y.A., 20006, *"Thermodynamics: An Engineering Approach",* 5th edition, Mc Graw Hill.
2. Hibbeler R.C., 2005, *"Mechanics of Materials",* SI Second Edition, Prentice Hall International.
3. Callister, W.D. Jr, 2007, *"Materials Science and Engineering: An Introduction",* 7th Edition, John Wiley.
4. Shackelford, J.F., 2005, *"Introduction To Materials Science For Engineers",* 5th 4. Edition, Prentice Hall.

DDA 2042 SAFETY ENGINEERING AND MAINTENANCE

SYNOPSIS:

Fundamentals to safety engineering and maintenance including accidents statistics are introduced in this course. Hazard identification in a working place and evaluation of the potential risks will be discussed and the students will carry out a group project as a case study. Topics on how to reduce the accident risks are also taught. Plant maintenance tasks will be covered at the last topic.

REFERENCES:

1. Daniel A. Crowl; *Chemical Process Safety*; Second edition; Prentice Hall; 2002
2. Vic Marshall , Steve Ruhemann ; *Fundamentals of process safety Institution of Chemical Engineer* (IChemE), 2001
3. Lars Harms Ringdahl ; *Safety analysis : Principles and practice in occupational safety*, Taylor & Francis , London 2001
4. Willin Hammer, dennis Price ; *Occupational safety management and engineering*, 5 th Edition, Prentice hall, New Jersey 2001

DDA 2053 MATERIALS SCIENCE

SYNOPSIS:

Introduction, Materials Structure, Materials Characteristics, Solidification, Crystal Imperfection and Diffusion in Solid, Phase Diagram, Metals, Kinetics-Heat Treatment, Other Materials, Enviromental Effects on Materials.

REFERENCES:

1. Callister, W.D. Jr, 2007, *"Materials Science and Engineering: An Introduction",* 7th Edition, John Wiley.
2. Smith, W.F., 2004, *"Principles Of Materials Science And Engineering",* 3rd Edition, McGrawHill.
3. Shackelford, J.F., 2005, *"Introduction To Materials Science For Engineers",* 5th 4. Edition, Prentice Hall.
4. Smith, W.F., 1996, *"Principles Of Materials Science And Engineering",*3rd Edition, McGrawHill.

YEAR 2
SEMESTER II

UMA 3032 AKIDAH KETUHANAN DAN SAINS

SYNOPSIS :

Perbincangan dalam kursus ini tertumpu kepada dua perkara asas iaitu konsep pegangan akidah keagaman dan juga pandangan tentang sains. Konklusi daripada daripada kursus ini ialah untuk melihat kewujudan hubungan antara kedua perkara ini serta bentuk-bentuk hubungan yang wujud antara keduanya. Hasilnya ialah pembentukan satu model pemikiran ke arah mengharmonikan sains dengan dasar kepercayaan agama. Kandungan kursus ini terdiri daripada; Manusia dan agama; teori asal usul agama, peringkat perkembangan aqidah daripada monotheism kepada polytheism serta factor-faktor penyelewengan aqidah monotheism mutlak. Konsep ketuhanan dalam berbagai agama. Sains dan nilai serta kebangkitan pemikiran sains barat dan sumbangan pemikiran sains Islam terhadapnya.

REFERENCES :

1. Aminuddin Ruska Al-Dawamy (et al) (1998), *Aqidah Ketuhanan dan Sains*. Skudai. Pusat Pengajian Islam dan Pembangunan Sosial, Universiti Teknologi Malaysia
2. Hussain Othman (2001), *Iman dan Sains: Satu Pengenalan,* Pusat Pengajian Kemanusiaan dan Komunikasi, KUiTTHO
3. Haron Din. (et al, 3 jilid) (1994). *Manusia dan Islam.* Kuala Lumpur: Dewan Bahasa dan Pustaka
4. Titus, Harold H dan Marilyn S. Smith. *Living Issues In Philosophy* (1974). New York. D. Van Nostrand Company

DSM 2932 ENGINEERING STATISTICS

PRE REQUISITE : DSM 1913 (MATHEMATICS II)

SYNOPSIS :

Random Variables : Discrete and continuous random variables, probability distribution functions, cumulative distribution functions, expected values and variance. **Special Probability Distributions :** Binomial distribution, Poisson distribution, means and variances,

Poisson approximation to Binomial distribution, normal distribution, standard normal distribution, normal approximation to Binomial distribution. **Sampling Distribution :** Sampling distribution of single mean, sampling distribution of the difference between two means, sampling distribution test: *t*-distribution. **Estimation :** Point estimate, confidence interval for single mean, confidence interval for difference between two means. **Hypothesis Test :** Type 1 and type 2 errors, hypothesis test for single mean, hypothesis test for difference between two means. **Simple Linear Regression :** Graphical method, simple linear regression model, least square method, coefficient of determination, correlation coefficient.

REFERENCES

1. Cik Sri Mazzura, Nafisah, Kek, S.L. & Phang, P. (2007) *Engineering Statistics* (Module)
2. Douglas C. M., George C. R. , Norma Faris Hubele (2004) *Engineering Statistics.* New York: John Wiley.
3. Robert D. M. (1994) *Statistics: An Introduction.* Sounders College Publisher, Texas.
4. William, M., Terry, S. (1992) *Statistics for Engineering and Sciences*. San Francisco: Dellen Publishing Company.
5. Allan G.B. (2001) *Elementary Statistics*: A *Step by Step Approach*. McGraw-Hill.

DDA 2063 DYNAMICS

PRE REQUISITE: STATICS

SYNOPSIS:

This subject is an introduction of engineering dynamics to diploma students in mechanical engineering. The topics cover mainly in two dimensional or planar coordinate system of kinematics and kinetics of particles as well as the kinematics and kinetics of rigid bodies. Practical engineering applications found in mechanical engineering field are discussed in the form of example problems. On completion, students will be able to determine the position, velocity and acceleration of particles and rigid bodies using kinematics analytical approach, to use law of motion to relate forces and acceleration of particles and rigid bodies, to apply the principle of work and energy to solve kinetics problem on particles or rigid bodies, and to solve the kinetics problems using the principles of impulse and momentum. Since a group project is part of the assignments, students are trained

to effectively communicate ideas and to present the team conclusion in a professional manner.

REFERENCES:

1. Hibbeler R.C., 2007. *"Engineering Mechanics - Dynamics",* 11th S.I. Edition, Prentice Hall
2. Meriam J.L. and Kraige L. G., 2008. *"Engineering Mechanics - Dynamics"*, 6th Edition, John Wiley.
3. Bear F.P and Johnson E.R.,2007. *"Vector Mechanics for Engineers - Dynamics",* 8th S.I. Metric Edition, Mc Graw Hill
4. Siswanto W.A, 2008. *"Principles of Engineering Dynamics – Concise Theory and Applications",* First Edition, Penerbit UTHM.

DDA 2073 MECHANICS OF SOLIDS

PRE REQUISITE: STATICS

SYNOPSIS :

Stress and Strain, Shear Force and Bending Moment, Bending Stress, Torsion, Thin Cylinder and Complex Stress.

REFERENCES :

1. Hibbeler, R.C., 2005. *"Mechanics of Materials",* SI Second Edition, Prentice Hall International.
2. Gere, J.M. dan Timoshenko, S.P., 1997. *"Mekanik Bahan",* edisi ketiga, Penterjemah : Ahmad Zafri Zainuddin, Muhammad Her Jantan, UTM.
3. Beer, F.P and Johston, E.R., 1996. *"Mechanics of Materials"* John Wiley.
4. Modul Mekanik Pepejal 1, UTM.

DDA 2082 ENGINEERING MATERIALS SELECTION

PRE-REQUISITE: Materials Science

SYNOPSIS:

Introduction to Materials Selection, Design Process, Engineering Materials and Its Behaviours, Materials Selection Chart, Selection of Ferus and Non-Ferrous Metals.

REFERENCES:

1. Ashby M.F., 2000, *"Materials Selection in Engineering Design",* 2th Edition, Butterworth-Heinemann.
2. Budinski K. & Budinski, G., 2002, *"Engineering Materials Properties and Selection",* Prentice Hall.
3. Dieter G.E., 2000*, "Engineering Design: A Materials And Processing Approach",* 2nd Edition, McGraw-Hill.
4. Mangonon P.L., 1999, *"The Principles of Materials Science for Engineering Design",* Prentice Hall

DDA 2721 ENGINEERING LAB PRACTICE II

SYNOPSIS:

Solid Mechanics: Tensile, Torsion, Shearing Force in Beam, Bending Moment, Thin Cylinder.
Dynamic: Rectilinear Motion, Curvilinear Motion, Second Newton Law, Rotation about Fixed Axis, General Plane Motion.

REFERENCES:

1. Keith M. W., 2004, "Applied Mechanics for Engineering Technology", 7th edition, Prentice Hall.
2. James M. dan Timoshenko, Stephen P.; Ahmad Zafri Zainudin, Muhammad Her Jantan dan Yahaya Ramli; Penterjemah, 1997, "Mekanik Bahan", Edisi Kedua, UTM.
3. Beer F. and Johnston E. R., 1992, "Mechanics of Materials", 2nd Edition, Mc Graw Hill.
4. Bickford W. B., 1993, "Mechanics of Solids, Concepts and Applications", Mc Graw Hill.
5. Meriam J. L & Kraige L. G., 1990, "Applied Engineering Mechanics: Dynamics", Prentice Hall.

YEAR 3

YEAR 3
SEMESTER I

DPK 2013 ASAS PERNIAGAAN DAN KEUSAHAWAN

SYNOPSIS :

Persekitaran Ekonomi dan Perniagaan, Bentuk Peraturan dan Kemudahan Sokongan Perniagaan, Usahawan dan keusahawanan, Kaedah mengenalpasti, mengkaji dan memilih peluang-peluang perniagaan, Bentuk, peraturan dan kemudahan sokongan perniagaan, Rancangan Perniagaan, pengurusan perniagaan kecil dan sederhana, Rancangan pemasaran, Rancangan operasi, Rancangan kewangan, Isu-isu Dalam Keusahawanan.

REFERENCES :

1. …. (1999), *"Keusahawanan",* MEDEC, UiTM
2. Saridan Abu Bakar, (1997), *"Penyediaan Rancangan Perniagaan",* MEDEC UiTM
3. Wan Liz Ozman Wan Omar dan Sulzari Mohamed, (2002), *"Memperkasakan Usahawan: Panduan Lengkap Pengurusan Perniagaan dan Penjanaan Usahawan",* Utusan Publications & Distributors Sdn Bhd
4. Robert D. Hisrich dan Michael P. Peters, (2002), *"Entrepreneurship",* Fifth Edition, McGraw-Hill

DTI 2143 PENGATURCARAAN KOMPUTER

SYNOPSIS :

Untuk memberi pengenalan kepada konsep pengaturcaraan melalui penggunaan bahasa paras tinggi seperti C. Sejarah dan evolusi bahasa pengaturcaraan, jenis-jenis data, dan operasi input dan output. Pengaturcaraan berstruktur dan kawalan: gelung while, gelung for, switch, if-else. Penggunaan fungsi, tatasusunan, struktur dan penuding.

REFERENCES :

1. Byron S. Gottfried, *"Programming with C",* Mc Graw Hill, 1990
2. Baharudin Mohamed, *"Modul Pengaturcaraan Kejuruteraan C",* KUiTTHO, 2001
3. Marini Abu Bakar et al, *"Pengaturcaraan C",* Prentice Hall, 1999
4. Nor Haizan Mohamed Radzi, *"Pengaturcaraan C"*, UTM, 1998

DDA 3023 ***CAD***

PRE REQUISITE: Engineering *Drawing*

SYNOPSIS **:**
Introduction to computer aided design (CAD), coordinate system and using object snap, draw command, editing drawing, 2D drawing, dimensioning, 3D drawing, assembly drawing, plotting.

REFERENCES**:**

1. **Khairul Anuar Hanafiah (2006)**, *"Lukisan Kejuruteraan Berbantu Komputer – Edisi Kedua*", Universiti Teknologi Malaysia, Johor, Malaysia.
2. **Jamaluddin Mohd Taib, Khairul Anuar Hanafiah dan Mohd Fadzli Daud (2006)**, *"Rekabentuk Berbantu Komputer – Asas Pemodelan",* Universiti Teknologi Malaysia, Johor, Malaysia.
3. *"AutoCAD 2006*, *user guide"*.
4. **Mohd Fadzli Daud and Khairul Anuar Hanafiah (2000)**, *"Panduan Asas Lukisan Kejuruteraan",* Universiti Teknologi Malaysia, Johor, Malaysia.

DDA 3033 **FLUID MECHANICS**

PRE REQUISITE: Mathematics II and Physics II

SYNOPSIS:

Fluid Physics, Fluid Static, Fluid Kinematics, Energy and Momentum, and Dimensional Analysis.

REFERENCES:

1. Potter, M.C. and Wiggert, D.C., (1997), *Mechanics of Fluids*, 2nd Edition, Prenctice Hall.
2. Munson, B.R., Young, D.F. and Okiishi, T.H., (2002), *Fundamentals of Fluid Mechanics*, 4th Edition, John Wiley & Sons.
3. Mott, R.L., (2000), *Applied Fluid Mechanics*, 5th Edition (International Edition), Prentice Hall.
4. Rajput, R.K., (1998),*Fluid Mechanics and Hydraulic Machines*, 1st Edition (SI units), S.Chand & Company Ltd.

DDA 3711 ENGINEERING LABORATORY III

PREREQUISITE SUBJECTS:-

SYNOPSIS:
Fluid Mechanics:
Jet impact, Reynolds Number, Bernoulli Theorem, Flow in pipes, Hydrostatic pressures, Cavities in pipes

Material Sciences:
Introduction to material sciences and engineering, types of materials, atomic bonding and structure, properties of materials: density and porosity, sample preparation and metallographic, study on heat treatment such as quenching and normalisation, samples preparation for metal and study on hardness and properties of clay

REFERENCES :

1. Munson B. R. et. al., 1998, *"Fundamental of Fluid Mechanics*", 3rd Edition, John Wiley & Sons.
2. Mott R.L., 2000, "*Applied Fluid Mechanics*", 5th Edition, International Edition, Prentice Hall.
3. Rajput R.K., 1998, "*Fluid Mechanics and Hydraulic Machines*", 1st Edition, S. Chand & Company Ltd.
4. Shackelford, J.S., 1999, "*Introduction To Materials Science For Engineers*",5th Edition, Prentice Hall.
5. Smith W.F., 1996, "*Principles Of Materials Science And Engineering*", 3rd Edition, McGrawHill.
6. Callister Jr. W.D., 1999, "*Materials Science And Engineering An Introduction*" 3rd Edition, Butterworth-Heinemann.

DDA 3043 MECHANICS OF MACHINES

PRE REQUISITE: DDA2063 DYNAMICS

SYNOPSIS :

This subject covers several topics including gear systems, balancing, power transmission, belting, friction in screws and nut, mechanism and introduction to vibration. These essential topics in machining might provide students with proficient theoretical and graphical background in dealing with machine systems. Student will learnt to apply the principle and theory of mechanics of machine to solve system's problem such as gear system, balancing and belting system in the real engineering practice

REFERENCES:

1. Roslan, Che' Abas, Mohd Yunus,"Mekanik Mesin", 2001, Edisi Ketiga, Unit Penerbitan UTM.
2. B.K. Sarkar, "Theory of Machines", 2002, Tata Mc-Graw Hill
3. J.S. Hannah and R.C. Stephens, "Mechanics of Machines",1972, Unwin Brothers Ltd.
4. John J.U, Gordon R.P, Joseph E.S," Theory of Machines and Mechanism", 2003, Oxford University N.Y.

YEAR 3
SEMESTER II

DDA 3052 INDUSTRIAL ENGINEERING

SYNOPSIS:

This subject covers the Introduction of Industrial Engineering, Facilities Planning, Basic Concepts of Statistics, Method Study, Work Measurement, Ergonomics, Production Planning and Control, Quality Control, Material Resources Planning (MRP), Just in Time (JIT), Supply Chain Management.

REFERENCES:

1. Heizer, J. and Render, B., 2006, "Principles of Operations Management", 8th Edition, Prentice Hall.
2. Krajewski, L.J., 2002, "Operations Management: Strategy and Analysis", 6th Edition, Prentice Hall.
3. Stevenson, W.J., 2007, "Operations Management", 9th Edition, McGraw Hill.
4. Wayne C. Turner, Joe H. Mize, Kenneth E. Case and John W. Nazemeth, 1993,"Introduction to Industrial and Systems Engineering", 3rd ed., Prentice Hall.

DDA 3063 ENGINEERING DESIGN

PRE REQUISITE: Statics, Dynamics, Solid Mechanics

SYNOPSIS :
Introduction to engineering design, Static design failure of theories, Fatigue design failure of theories, and some standard machine components analysis such as shafts, bearings, gears, screws and fasteners.

REFERENCES:

1. **Shigley, J. E., Mischke, C. R. & Budynas, R. G.**, **(2004)**, "Mechanical Engineering Design", Seventh Edition, McGraw Hill
2. **Eggert, R. J.**, **(2005)**, "Engineering Design", Pearson/Prentice Hall, New York.
3. **Spotts M.F., (1998)**, "Design of Machine Elements - Sixth *Editions*", Prentice-Hall of India, Private Limited.
4. *"Mechanical Engineering Design Handbooks".*

DDA 3913 ENGINEERING TECHNOLOGY PROJECT

SYNOPSIS :

Students should conduct and complete a project of mechanical and manufacturing engineering for a period of one semester. This project should be conducted at the end of the SEMESTER II. The priority of the project is industrial based project which covered product design, fabrication and commissioning. Implimentation of this project is to apply theoretical knowledge into current practical applications. Execution of this project will built students communication skills, team works and competence in application technology.

REFERENCES :

1. Panduan Pelaksanaan Projek Kejuruteraan, FMKP

DKE 3273 ASAS ELEKTRIK DAN ELEKTRONIK

SYNOPSIS :

Asas-asas elektrik, struktur atom. Rintangan, keberaliran, kod warna, hukum Ohm, kuasa dan tenaga, litar siri dan selari mengandongi perintang, hukum-hukum Kirchhoff, medan magnet, daya gerak magnet, keamatan, kebolehtelapan, litar magnet, histerisis, hukum Faraday, hukum Fleming, hukum Lenz, kearuhan kendiri dan saling, cas, fluks elektrik, kemuatan, voltan arus ulang alik, gambarajah fasor, litar salun, pengubah satu fasa, unggul, sebenar, pengaturan, kecekapan, diod, zener diod, penerus, transistor dwi-kutub, transistor kesan medan.

REFERENCES :

1. Noel Morris, *Electrical and Electronic Principles*, Longman Scientific and Technical, 1980
2. E. Hughes, *Electrical Technology,* 7th Edition, Longman, 1995
3. Yahya Emant, *Prinsip Elektrik,* Dewan Bahasa dan Pustaka, 1987
4. Frank Petruzella, *Electricity and Electronics Fundamentals Book 1 & Book 2,* Mc Graw-Hill, 1987

DDA 3072 MANUFACTURING PROCESS

SYNOPSIS :

Introduction to manufacturing, manufacturing part geometrical distribution, aspect of materials, design and manufacturing, casting process, plastic shaping process, shaping process, material removal process, joining process, measurement and quality confirmation.

REFERENCES :

1. Kalpakjian S., Addison E.D, *"Manufacturing Processes for Engineering Materal",* 1997, 2nd edition, Addison and Wesley
2. Amstead B.H., Phillip F.Ostwald and Myron L. Begeman., *"Manufacturing Processes",* 1987, John Wiley and Son

YEAR 3
SEMESTER III

DDA 3814 INDUSTRIAL TRAINING

SYNOPSIS :

Students are required to undergo industrial training as trainee engineers in mechanical engineering for a period of 12 weeks. Students will be required to follow industrial training schedule provided by the company for example planning, management, designing, evaluating, decision making, specialization and supervision. Assessment will be conducted by supervisors appointed from the faculty and the industry.

REFERENCES :

1. Industrial Training Log Book
2. Industrial Training Guided Book Implementation, FKMP.